

A NEW SPECIES OF *DELIAS* HÜBNER (LEPIDOPTERA: PIERIDAE) FROM NEW IRELAND, PAPUA NEW GUINEA

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Abstract

Delias brandti sp. nov. is described and figured from the mountains of New Ireland. It is placed in a species group of its own, based on distinctive genitalia. Notes on the distribution of *D. messalina lizae* Müller in New Ireland are also included.

Introduction

The large genus *Delias* Hübner contains butterflies that commonly have brightly coloured undersides. They are distributed throughout the Asia-Pacific region from India, China and Taiwan to Australia, Solomon Islands, Vanuatu and New Caledonia. Based on similar genitalia, Klots (1933) considered that the closest relative of *Delias* is *Cepora* Billberg. He also noted that the pupae of the Neotropical *Pereute* Herrich-Schäeffler are indistinguishable from those of *Delias*. Corbet and Pendlebury (1978) suggested that *Delias*, *Pereute* and the African genus *Mylothris* Hübner probably form a good tribe.

The revision of *Delias* by Talbot (1928-37) remains the major work to date, although much literature dealing with the genus has been published since, including that of Roepke (1955), van Mastrigt (1989, 1990, 1993) and Yagashita *et al.* (1993). The latter work listed around 230 species, although a proportion of these are of dubious status.

In February 1998, during a visit to the Australian National Insect Collection, Canberra, an unusual female *Delias* specimen from New Ireland in the W. W. Brandt collection was noticed, prompting a trip to montane New Ireland in July-August 1998. This specimen was later figured by Parsons (1998) as the female of *D. narses* Heller. The specimen does not correspond with females of *D. narses* from New Ireland in the author's collection and another from New Britain in the Australian Museum, Sydney. This error may be attributed to the extreme rarity of *D. narses* females in collections, combined with the identification label with the ANIC female that states *D. narses*.

In late August 1998, three specimens of an undescribed *Delias* were observed but not captured as they flew at great height over a spine ridge at about 1800 m in the Hans Meyer Range, southern New Ireland. As a result, during October-November 2000, a further expedition was undertaken into the southern mountains of New Ireland by the author. Two males and a single female of this species were collected, also at 1800 m. This new species is described here and shows very distinctive characters, especially its unusual genitalic morphology.

This work is one of a series of papers dealing with the taxonomy and biology of the butterflies of New Ireland (Müller 1999a, b, 2001; Müller and Sands 1999; Müller and Tennent 1999).

Abbreviations in this work are as follows: ANIC - Australian National Insect Collection, CSIRO, Canberra; AM - Australian Museum, Sydney; CJMC - Private collection of C. J. Müller, Sydney.

***Delias brandti* sp. nov.**

(Figs 1-4, 18)

Type material. *Holotype* ♂ (genitalia dissected and attached to specimen), PAPUA NEW GUINEA: Schleinitz Mts., 1800 m, south-central New Ireland, 20.x.2000, C.J. Müller (in ANIC). *Paratypes*: 1 ♂, 1 ♀, same data as holotype (CJMC); 1 ♀, Schleinitz Mts., 3000 ft, 2.x.-18.xii.1959, W.W. Brandt, Sir E. Hallstrom (ANIC).

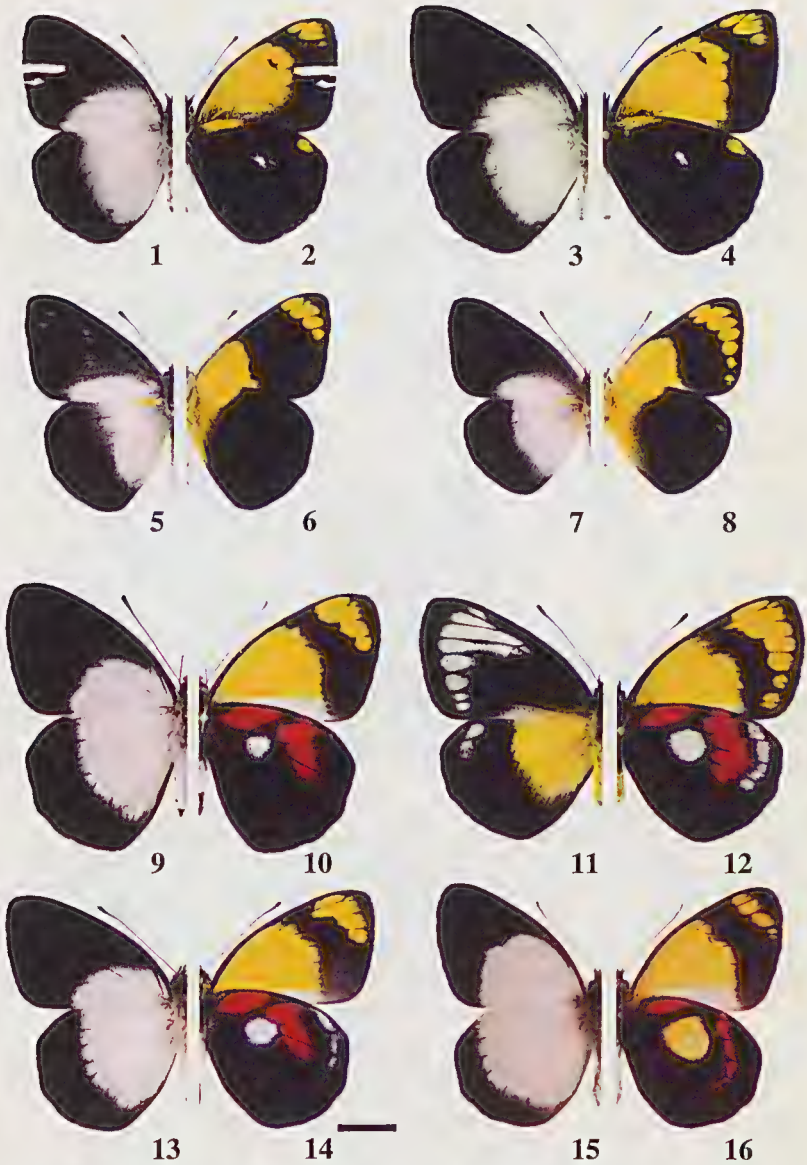
Description. *Male* (Figs 1, 2). Fore wing length 28 mm, antenna 14 mm. Head black, clothed with dense, deep grey hairs; labial palpus grey-cream, eye ringed with grey-cream; antenna black. Thorax black with long grey hairs dorsally; legs black. Abdomen white, valvae grey. Fore wing with costa slightly bowed towards base; upperside with ground colour black, basal one-third creamy white, cilia black; underside black with basal two-thirds chrome yellow, becoming irregular below vein 1A+2A; conspicuous black spot at end of cell between veins M_2 and M_3 ; subapical region with chrome yellow band, broken by veins. Hind wing upperside black with basal half creamy white, darkening to blue-grey in median area; underside with ground colour black; chrome yellow bar along costa at base; a small subapical spot of similar colour between veins Rs and M_1 ; a small white spot in discocellular region between veins M_2 and M_3 .

Genitalia (Fig. 18). Vinculum and tegumen ring broadly oval; uncus stout, ornate and rugose, blackened anteriorly; valva short and squat, covered with short, thick hair, apex blunt, ventral margin bowed centrally; saccus squat and rounded; aedeagus squared both anteriorly and posteriorly.

Female (Figs 3, 4). Fore wing length 29 mm, antenna 15 mm. As in male but with both wings broader; pale basal area on upperside with a yellow-cream suffusion; underside with chrome yellow on fore wing more extensive and reaching inner margin.

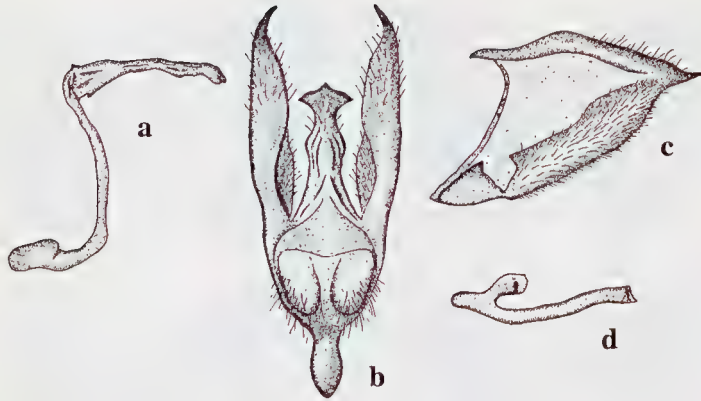
Etymology. This distinctive new species is named in honour of W. W. Brandt, who collected one of the female paratypes in the Schleinitz Mountains in 1959. Brandt spent a decade collecting in very remote parts of Papua New Guinea, his efforts resulting in the subsequent description of many taxa.

Early stages. Unknown.

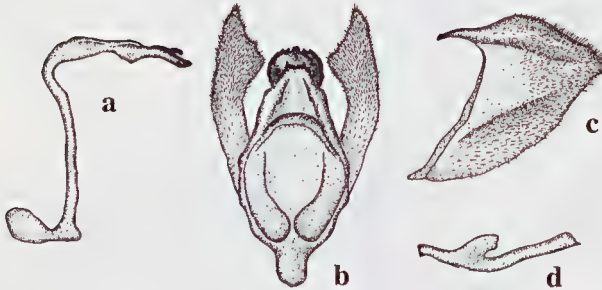


Figs 1-16. *Delias* adults from New Ireland and Bougainville. Odd numbers upperside, even numbers underside. (1, 2) *D. brandti* sp. nov. ♂; (3, 4) *D. brandti* ♀; (5, 6) *D. narses* ♂; (7, 8) *D. narses* ♀; (9, 10) *D. messalina lizae* ♂; (11, 12) *D. m. lizae* ♀; (13, 14) *D. m. lizae* ♂; (15, 16) *D. m. messalina* ♂. Scale bar = 1 cm.

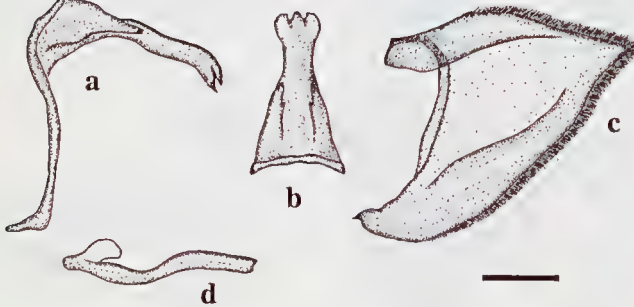
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18



19



Figs 17-19. Male genitalia of *Delias* from New Ireland. (17) *D. narses*; a. genitalic ring (lateral view); b. genitalia (dorsal view); c. right valva (lateral view); d. aedeagus (lateral view). (18) *D. brandii* sp. nov.; a. genitalic ring (lateral view); b. genitalia (dorsal view); c. right valva (lateral view); d. aedeagus (lateral view). (19) *D. messalina lizae*; a. genitalic ring (lateral view); b. sociuncus (dorsal view); c. right valva (lateral view); d. aedeagus (lateral view). Scale bar = 1 mm.

Discussion

The division of *Delias* into species groups by Talbot (1928-37) was based mainly on a detailed study of genitalia and androconial form. *Delias brandti* is unlike any other known *Delias* species. It shows vague wing pattern similarities with *D. ladas* Grose-Smith, *D. caliban* Grose-Smith (both *chrysomelaena* species group) and *D. messalina* Arora (*nigrina* species group). In particular, the latter species shares a similar white or yellow spot in the median area of the hind wing underside, while the wing shape is reminiscent of *D. eximia* Rothschild (also *nigrina* species group). In *D. messalina* this spot is centred in the cell (Figs 9-16), while in *D. brandti* it is situated along the discocellulars between the veins M_2 and M_3 . The fore wing underside pattern is distinctive in *D. brandti*, the blackened discocellulars being very unusual in *Delias*. The new taxon shows no close relationship to *D. narses* (Figs 5-8, 17).

The genitalia of *D. brandti* are unique (Fig. 18), particularly the uncus which is squat and rugose. While the adults are dissimilar in appearance, the genitalia of *D. vidua* Joicey & Talbot (*nysa* species group) and *D. brandti* show some minor similarities. The distinctive genitalia of *D. brandti* suggest that it should be placed in a species group of its own, related to the *nigrina*, *nysa* and *chrysomelaena* species groups.

Adults of *D. brandti* were collected flying over the canopy on a ridge summit, at around 1800 m, where the vegetation is montane moss forest and the tree canopy approximately 15-20 m high. They were taken flying with *D. messalina lizae* Müller and other *Delias* taxa. The flight of this species is more rapid than *D. messalina lizae*, while not as robust as that of *D. narses* and *D. totila* Heller.

Delias messalina lizae was previously known only from 6 specimens taken at 2400 m in the Hans Meyer Range in 1998. A small number of males was collected during October-November 2000 in the same mountain range at 1800 m, approximately 80 km NNW from the type locality. In addition, two males were taken in the Schleinitz Mountains, central New Ireland at 1400 m. *D. m. lizae* is highly variable, both in wing shape and extent of the bright markings beneath. Most of the known males are similar to the holotype, with a rather acute wing shape and lacking pale grey submarginal markings on the hind wing underside (Figs 9, 10). Two specimens, however, have more rounded wings and a grey submarginal line on the hind wing underside (Figs 13, 14). Females vary in the extent of the white submarginal markings on the upperside of both wings. The male genitalia are also illustrated (Fig. 19).

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